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DYKEMA GOSSETT PLLC
2723 SOUTH STATE STREET
SUITE 400
ANN ARBOR, MI 48104

EXAMINER	
SCHWARTZ, CHRISTOPHER P	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/064,997
Filing Date: September 06, 2002
Appellant(s): BROWN, TODD ALLEN

Jerome R. Drouillard
Dykema Gossett , PLLC
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 10, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 15-25 and 27-31 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,335,337	Okamatsu, et al.	6-1982
RE. 33,557	Kade et al.	3-1991
5,318,355	Asanuma, et al.	6-1994
5,343,970	Severinsky	9-1994
5,476,310	Ohtsu, et al.	12-1995
5,492,192	Brooks, et al.	2-1996
5,511,859	Kade et al.	4-1996
5,558,409	Walenty et al.	9-1996
6,598,945	Shimada et al.	7-2003
6,704,627	Tatara et al.	3-2004
5,000,297	Shaw et al.	3-1991

US 2001/00252219 Ohba et al. 9-2001

US 2003/0037977 Tatara et al. 2-2003

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

a. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

b. Claims 15,16,19,20,22-25,27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kade et al..

Regarding claims 15,25,27,30, as explained in the final rejection, Kade et al. discloses a hybrid brake control system comprising regenerative and friction brakes where the friction brakes are applied to at least a first axle and the regenerative brakes are applied to a rear or second axle. See column 3. Please note that Kade et al. also incorporates by reference several patents. These are RE. 33,557, US 5,558,409 and 5,000,297 whose incorporated teachings the examiner has also relied upon in application of the Kade et al. reference. Also disclosed are a plurality of sensors (see col 2 line 15 and note the pedal sensor and column 4 lines 1-8 and lines 62-67 where sensors are implied to measure the parameters of wheel slip and steering angle). Note the controller at 38. The system of Kade et al. also discloses an ABS system which proportions the friction and regenerative braking based on the amount of wheel slip. See the top of column 4 and column 7 lines 40-50.

Kade et al. lacks a specific discussion of reducing the regenerative braking applied to a rear axle while increasing the non-regenerative braking to a single selected wheel of the second axle to maintain the actual vehicle controllability value within a predetermined target value.

However, as discussed above, Kade et al. uses an ABS system to proportion the control of regenerative and friction braking. It is notoriously well known in the art to provide such systems, as shown by Kade et al., with traction or stability control systems which increase the braking force applied to at least one selected wheel to increase traction or decrease lateral slip. The reference to Tatara et al., applied below, is relied upon to teach such systems are generally included in many vehicles today. See column 1 lines 32-38.

Notwithstanding this argument however one having ordinary skill in the art would have found it obvious at the time the invention was made to have designed the system of Kade et al. to reduce the regenerative braking to the wheels of a first axle, such as the rear wheels, while increasing the friction braking (non-regenerative braking) to a single selected wheel of the front axle, such as a front wheel of the vehicle, during emergency braking or sudden stops to maintain optimal control of the vehicle. Note that during an ABS braking cycle the braking pressures of the friction brakes are repeatedly decreased and increased, in rapid fashion, until the vehicle comes to a stop. As broadly claimed, to determine the vehicle controllability based on at least one measured vehicle controllability value, such as yaw or wheel slip (col. 4 lines 8 and 64 respectively) and at

least one predetermined target value, such as vehicle or wheel speed, is inherent in the reference as modified above.

Regarding claim 16 the controller claimed is considered to be an alternate equivalent arrangement to that shown by Kade et al.

Regarding claims 19,20 to have used a measured value of the longitudinal wheel slip ratio or comparing target and actual vehicle tire slip angles would have been obvious to one of ordinary skill in the art at the time the invention was made since it is notoriously well known in the art to use such parameters in the determination of the distribution of braking forces in vehicle stability control/ABS systems. See the discussion at the top of column 4.

Regarding claims 22-24 the limitations of "greater than 10 percent" and "greater than 5 percent" are relative values and would have been obvious to the ordinary skilled worker in the art in view of the teachings of Kade et al., and as modified above, dependent upon the brake force distribution desired between friction and regenerative braking under particular road and or driving conditions.

Regarding claim 28, simply to have reversed the axles on which the friction or non-regenerative and regenerative brakes are applied would have been obvious to the ordinary skilled worker in the art at the time of the invention, for example, dependent upon whether the vehicle is a front or rear wheel driven vehicle.

Regarding claims 29,31 these limitations would have been obvious to the ordinary skilled worker in the art at the time of the invention for increased stability of the vehicle.

c. Claims 17,18,21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kade et al. in view of Tatara et al. (pat no. 6,704,627).

Regarding claim 17 Kade et al. lacks determining lateral acceleration and yaw rate of the vehicle. However note the discussion at the bottom of column 4 of Kade et al. where braking control on the amount of vehicle yaw is discussed.

Tatara et al., discloses a drive force distribution system for a hybrid vehicle where an electric motor provides drive and regenerative braking forces to the rear wheels based upon a number of vehicle conditions which include yaw rate and lateral acceleration. See the discussion on page 2.

One having ordinary skill in the art at the time of the invention would have found it obvious to have modified the brake system of Kade et al. so that the blending of the brake forces on the axles/wheels thereof is dependent, in part, upon the yaw rate and the lateral acceleration of the vehicle for increased stability thereof.

Regarding claims 18, simply to have reversed the axles on which the friction or non-regenerative and regenerative brakes are applied would have been obvious to the ordinary skilled worker in the art at the time of the invention dependent upon whether the vehicle is a front or rear wheel driven vehicle.

Regarding claim 21 to have determined and compared *target* and *actual* vehicle yaw rates would have been obvious to one of ordinary skill in the art at the time the invention was made since it is notoriously well known in the art to use such vehicle parameters in the determination of the distribution of braking forces in vehicle stability control/ABS systems. Please see the references cited in their entirety.

(11) Response to Argument

Applicant's arguments have been considered but are believed to be addressed in the previous section and for the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

CHRISTOPHER P. SCHWARTZ
PRIMARY EXAMINER

cps
December 21, 2004

Conferees
DB, JJW, CPS
12/21/04

FORD GLOBAL TECHNOLOGIES, LLC.
SUITE 600 - PARKLANE TOWERS EAST
ONE PARKLANE BLVD.
DEARBORN, MI 48126